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College of Mechanical and Electrical Engineering

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THE UNIVERSITY PRESS

CATALOGUE

OF THE

STATE UNIVERSITY OF KENTUCKY

FOR THE

SESSION ENDING JUNE 4, 1914

COLLEGE OF MECHANICAL AND ELECTRICAL ENGINEERING

PRINTED BY THE UNIVERSITY PRESS
LEXINGTON, KY.

Let the

State University

# of Kentucky

Help every young Man
in the Commonwealth
to Become an Active,
Vigorous Factor in the
Work of his Times.

What is Dynamic Engineering?

The knowledge which is necessary to the mechanical engineer to enable him most effectually to adapt the achievements of Science and Art to the use of mankind, may be looked upon as the true basis of Dynamic Engineering.

The State University of Kentucky graduates in Mechanical Engineering and Electrical Engineering are looked upon as among the most capable young men who enter the profession, and the State of Kentucky has provided for her sons a college for this technical work that is remarkable for its equipment and general efficiency.

This is a Day of Opportunity

There is an increasing, unsupplied demand for young men who are well trained in the fundamentals of mechanical engineering and electrical engineering.

Every industry in the manufacturing world, whether it be one building machine tools, electrical machinery, steam engines, gas engines, locomotives, cars for steam or electrical roads. hydraulic machinery, and the automobile, succeeds only through the efficiency of some mechanical engineer. All manufacturing companies (where power is always used) develop largely through capable machine designers and those who know how to use power economically.

Every Young Kentuckian

can afford to investigate the course of study offered by the State University for a professional training in this new and fundamental science of engineering which is so closely related to our national industrial development.

EVERY STURDY YOUNG MAN WELL TRAINED IN DYNAMIC ENGINEERING IS BOUND TO SUCCEED IN ONE OF THE MOST FASCINATING AND REMUNERATIVE FIELDS OF WORK KNOWN TO HUMAN ENDEAVOR.

SCHEDULE OF ENTRANCE EXAMINATIONS.

1914.

	FRIDAY Sept. 11.	SATURDAY Sept. 12.
Algebra	9–11 A. M.	11– 1 P. M.
Astronomy	9–10 A. M.	8– 9 A. M.
Botany	10–11 A. M.	10–11 A. M.
Chemistry	11– 1 P. M.	9–11 A. M.
Civics		8– 9 A. M.
Drawing		9–10 A. M.
English	11– 1 P. M.	11– 1 P. M.
French	11– 1 P. M.	11– 1 P. M.
Geometry (Plane)	3– 5 P. M.	9–11 A. M.
Geometry (Solid)	3– 5 P. M.	3– 5 P. M.
German	3– 5 P. M.	3– 5 P. M.
Greek	8–10 A. M.	8–10 A. M.
History	9–11 A. M.	8– 9 A. M.
History (American)	9–10 A. M.	9–10 A. M.
Latin	3– 5 P. M.	3– 5 P. M.
Manual Training	3– 5 P. M.	3– 5 P. M.
Physical Geography	3– 5 P. M.	3– 5 P. M.
Physics	9–11 A. M.	9–11 A. M.
Physiology	9–10 A. M.	9–10 A. M.
Trigonometry	9–11 A. M.	11– 1 P. M.
Zoology		3– 5 P. M.

EXAMINATIONS FOR REMOVAL OF CONDITIONS.

The regular Fall examinations for removal of conditions will be held Monday and Tuesday, September 14th and 15th. After those days a fee of $1.00 will be required.

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JAMES K. PATTERSON, Lexington	January, 1916
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ROBERT W. BROWN, Louisville	January, 1918
TIBBIS CARPENTER, Scottsville	January, 1918
WILLIAM H. COX, Maysville	January, 1918
DENNY P. SMITH, Cadiz	January, 1918
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COLLEGE OF MECHANICAL AND ELECTRICAL ENGINEERING.

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JOHN SHERMAN HORINE, M.E.,
Assistant Professor in Steam Engineering.

JOHN JAMES CURTIS, M.E.,
Assistant Professor in Testing of Materials.

PERRY ROGAN CASSIDY, B,M.E.,
Assistant Professor in Thermodynamics.

JOSEPH DICKER,
Superintendent of Shops.

JAMES RAY DUNCAN, B.M.E.,
Instructor in Electrical Engineering.

JOHN BORN DICKER,
Instructor in Wood Shop.

ELIJAH LATHAM REES, C.E.,
Associate Professor of Mathematics.

HAROLD HARDESTY DOWNING, B.C.E.,
Assistant Professor of Mathematics.

LOYD CADIE DANIELS, Ph.D.,
Assistant in Chemistry.

ROBERT HOOVER SPAHR, B.S.,
Assistant in Physics.

MARJORIE AND HELEN LOWRY,
Instructors in Freehand Drawing.

GORDON THURMAN,
Assistant in Steam and Electrical Laboratorics.

JESSE VERNON BAXTER,
Engineer and Assistant in Wood Shop.

IZAAC WATKINS,
Engineer in Experimental Laboratory.

MRS. NELL H. TURNER,
Secretary to the Director of Mechanical Engineering.

MISS ETHEL JELLEY,
Mimeographist, College of Mechanical and Electrical Engineering.

COLLEGE OF MECHANICAL AND ELECTRICAL ENGINEERING.

FREDERICK PAUL ANDERSON, DEAN AND DIRECTOR.

INTRODUCTORY STATEMENT.

This college is organized for the purpose of giving to young men a comprehensive training in dynamic engineering. All fields of human endeavor dealing with the development, use and transmission of power are well defined, component parts of dynamic engineering.

The aim of the curriculum in this college is to prepare graduates for doing creditable work in such branches of mechanical and electrical engineering as are represented by the following activities:

Machine tool building; steam engine and steam turbine design and construction; gas engine design and manufacture; telephone engineering; design, construction, testing and installation of all classes of electrical apparatus and machinery; converting structural steel into bridges and buildings; the physical testing of all classes of building materials; steel making in all of its branches; glass making; heating and ventilation; central power plant design; illuminating engineering, hydraulic engineering; locomotive building; car building; automobile manufacture; pumping machinery building; development of steam and elecric traction lines; designing isolated lighting and power plants for public buildings; architectural engineering and the design and operation of all plants manufacturing any apparatus or supplies for man's use.

The capable dynamic engineer should possess that knowledge to enable him most effectively to adapt the achievements of science and art to the use of mankind. The technical school, with courses of study of high standard, gives that fundamental training which makes possible brilliant and useful careers in the profession of mechanical and electrical engineering.

Ever since the organization of this department in June, 1891, there have been more available places for Kentucky men than there have been graduates and the demand for young men equipped for mechanical and electrical engineering work at the close of each college year is far in excess of the graduates.

It is difficult to conceive of a profession that offers in this age of industrial achievement such large opportunities for lives of usefulness and remuneration as dynamic engineering.

Kentucky has provided for her sons unusual facilities for gaining an education in mechanical and electrical engineering. No other State in the Union makes such liberal concessions to her young men to gain an education as Kentucky. A country appointed student not only gets his tuition, matriculation fees and room rent free, but the Legislature has actually provided that he receive his traveling expenses from his home to the college and return. The expenses for any resident of the State, whether he be appointed or not, are reduced to a minimum. Every young Kentuckian should recognize that the State has put at his command excellent facilities for obtaining an education in mechanical and electrical engineering. He should further appreciate the fact that the State is making provisions that would cost each student at least two hundred dollars a year for tuition should all the expenses of his training be received in a school not supported by State or federal aid.

EQUIPMENT.

Building.

Mechanical Hall is the home of the College of Mechanical and Electrical Engineering. It contains thirty thousand square feet of floor and is admirably arranged for all recitation, lecture, drawing and laboratory work.

The Shops.

The shops or mechanical laboratories are furnished power by a Hamilton-Corliss engine and the steam for this is supplied from a Babcock and Wilcox boiler in one of the independent boiler houses.

The equipment in the various shops is briefly indicated as follows :

The wood shop contains thirty benches, each with a complete set of bench tools; and twenty-two laths, each with a complete set of woodturning tools. Besides these, there are a band saw, a jig saw, two circular saws, a trimmer and a grindstone.

The foundry contains a 30-inch cupola furnace, having a capacity of a ton of metal per hour, a brass furnace, twelve complete sets of moulder's tools, twelve benches, besides the ladles, flasks, clamps, core oven, pattern rack. and other equipment such as is used in practical foundry operation.

The blacksmith shop is equipped with fifteen down-draft forges.

With each forge there is a set of blacksmith tools. A power hammer is available for heavy work.

The machine shop contains nine lathes, two milling machines, one planer, two shapers, two drilling machines, one dry emery grinder, one electric drill grinder, one universal grinding machine, one sensitive drill, twelve vices for bench work in metal, an air compressor, two power hack saws, some pneumatic tools, and a small punch and shear.

The tool room is equipped with an assortment of such tools and supplies as are used in the shops. In connection with the shops there is a washroom containing lockers for the accomodation of the students.

Drawing Rooms.

Three well lighted and convenient drawing rooms are provided, one for freshmen, one for sophomores and juniors, and one for seniors.

Recitation Rooms.

The recitation rooms are as follows: senior heat engineering, senior and junior electrical engineering and junior mechanics of engineering. These rooms are all provided with stereopticons and two have projectoscopes.

Library.

The department library and reading room contains a good selection of technical books and many of the current scientific and engineering journals, all available to students.

Senior Room.

A handsomely furnished room known as the senior room is provided, which serves the purpose of a club room for reading and rest. The meetings of the Tau Beta Pi scholarship engineering society are held here.

Photographic Laboratory.

Commodious and convenient quarters are arranged for giving to seniors a good course in practical photography. The equipment consists of excellent cameras for all classes of subjects, and the facilities for making lantern slides, copies and enlargement are first class.

Blue Print Laboratory.

The attic of the administration part of Mechanical Hall is devoted to the art of blue printing. Large frames for sun and artificial printing are included in the printing.

Offices.

Offices are provided for instructors.

STEAM AND GAS ENGINEERING LABORATORY.

The steam engineering laboratory is equipped with indicators, planimeters, gauges, pyrometers, reducing motion apparatus, scales, micrometers, tachometers, and other small apparatus. It contains a 40-horsepower Houston, Stanwood and Gamble cross-compound throttling engine, a 10-horsepower Corliss engine, a 25-horsepower Buffalo Forge engine, a 35-horsepower Westinghouse single-acting compound engine, a small slide-valve engine for elementary experimental work in valve setting, a small engine with a Stephenson valve gear, and a 10-horsepower De Laval turbine. There are also two 4-horsepower Fairbanks-Morse gasoline engines with gas attachments, and the necessary auxiliary apparatus for testing, a 35-horsepower Atlas automatic cutoff engine, a 150-horsepower Buffalo Forge tandem compound engine, a 200-horsepower Wheeler condenser, which is so arranged that all engines in the main laboratory can be operated condensing. A testing plate has been arranged for holding down engines for commercial testing. An automobile testing plant has been installed which will make possible the testing of the largest automobile built. In the future much attention will be paid to automobile engineering by the University.

There are two separate boiler houses. One contains a 50-horsepower Babcock and Wilcox boiler and a No. 3 Dean pump. The boiler is used for heating and to supply steam to the Hamilton-Corliss engine, which furnishes power to the shops. The other boiler house is situated close to the steam laboratory, and a 100-horsepower Babcock and Wilcox boiler has been installed. This boiler can furnish steam at 200 pounds pressure, and an elaborate equipment for boiler testing has been installed, including induced draft apparatus, barrels and scales for weighing water, and devices for burning oil and gas, as well as coal.

The engines are all equipped with friction brakes and apparatus for carrying on all sorts of tests of refinement in steam engineering.

ELECTRICAL LABORATORY.

The equipment for carrying on experimental and research work in electrical engineering is as follows:

Direct Current Generators.

One 10 kw. 125-volt, Crocker-Wheeler Company;

One 10 kw. 125-volt, General Electric Company;
One 3 kw. 125-volt, Northern Electric Company;
One 8.5 kw. 125-volt Edison type, General Electric Company;
One 2 kw. 125-volt, Fort Wayne Electric Company.

Alternating Current Generators.

One 7-5 kw. 220-volt, 2 or 3 phase, 60 cycle, Jas. Clark Jr. Electric Company.

One 33 kw. 1100-volt, single phase, 133-cycle, Fort Wayne Electric Company.

One 50 kw. 1100-volt, single phase, 133-cycle, Westinghouse Electric and Manufacturing Company.

One 2 kw. single, 2 or 3 phase, 110-volt, 60-cycle, Central Laboratory Supply Company,

Direct Current Motors.

There are several small machines, some of them built in the shops which, with some of the generators mentioned above, give a good equipment for laboratory work.

Alternating Current Motors.

One 2-horsepower, single phase, 60-cycle, 110-volt, General Electric induction motor; two 5-horsepower, 60-cycle, 220-volt 2 and 3 phase induction motors, James Clark Junior Electric Company; one Emerson ½-horsepower, 110-volt, 60-cycle single phase induction motor.

Watt-Hour Meters.

The laboratory is equipped with one of each of the following: General Electric Company induction type; Fort Wayne induction type; Sangomo mercury type; Duncan commutator type.

Portable Indicating Instruments.

One induction type wattmeter; three dynamometer type wattmeters with a voltage multiplier and a current transformer; two Weston a. c. or d. c. voltmeters with multipliers; three Thompson voltmeters; one American d. c. voltmeter; one Queen d. c. voltmeter; one Weston d. c. voltmeter; three hot wire ammeters; two Weston millivoltmeters with 100 ampere and 500 ampere shunts; one Weston d. c. ammeter; three Thompson ammeters; one American d. c. ammeter; one Roller-Smith dynamometer type ammeter; one Leeds & Northrup electrodynamometer and one Queen electrometer.

Miscellaneous Equipment.

One Wagner 1½ kw. motor generator set for converting 110-volt 60-cycle, single phase alternating current to 125-volt direct current; one lifting magnet and one plunger magnet made in the shops; one Leeds & Northrup potentiometer; three Weston standard cells; one Rowland electrodynamometer with shunt box; four galvanometers; one torsion dynamometer; one vacuum pump; two Wheatstone bridges; one standard condenser; four condensers made in the shops; two Universal Manufacturing Company flat rate controllers; Tesla coils; one set of Thordarson laboratory apparatus and a varied assortment of storage cells, primary batteries, resistances, keys and switches.

Telephone Equipment.

Two complete experimental outfits were furnished by the Western Electric Company a few years ago. One contains all the equipment necessary to demonstrate both "A" and "B" board operation in connecting and disconnecting two subscribers and the other contains all the equipment for the ordinary connections between two subscribers connected into the same station. In addition to these outfits several telephones were furnished in connection with a device for party line ringing.

Besides the equipment described above, the telephone laboratory is equipped with a small American Electric Telephone Company's operator's board equipped with both common battery and magneto apparatus and with a number of subscribers' instruments for use on each of these types of circuits. These subscribers' instruments are equipped with the proper choke coils and condensers for multi-frequency party line ringing.

There are also a four-party harmonic ringing equipment, donated by the Kellogg Switchboard and Supply Company; a two-line telephone train dispatching equipment furnished by the Western Electric Company; a two-line telephone train dispatching equipment furnished by the General Railway Signal Company and a four-line automatic telephone equipment supplied by the Automatic Electric Company.

Photometers.

One Queen stationary photometer, and one Sharp-Miller portable photometer.

Transformers.

Two 15 kw. Fort Wayne 1,100 to 110 or 55 volts;
One 600 watt Fort Wayne 1,100 to 110 or 55 volts;
Two 5 kw. Duncan 110 to 55, 110 or 220 volts;

One 5 kw. Thordarson 110 to 5,000, 10,000, 15,000, 20,000, 30,000 or 40,000 volts.

TESTING OF MATERIALS LABORATORY.

The facilities for the study of the physical characteristic of engineering materials are in part as follows:

Two hundred thousand pound Olsen, specially designed automatic, autographic, motor-driven testing machine arranged for testing columns up to fifteen feet and transverse specimens up to twenty feet.

100,000 pound Riehle testing machine,
Automatic Cement Testing Machine, Fairbanks-Morse,
Standard Soapstone Moist Closet,
Copper Drying Oven,
Standard Steaming Apparatus,
Vicat Needle,
Set Gilmour's Needles,
Moulds, scales and accessories,
Automatic and autographic attachment,
Olsen's compression micrometer,
Olsen's Cylindrical Concrete Extension and compression micrometer,
Duplex Micrometer Measuring Instrument,
Duplex Compression Micrometer,
Olsen's Improved Deflection Instrument,
Improved Deal Deformer,
Duplex Measuring Micrometer,
Improved Deal Extensometer,
Universal Expansion Heads,
Standard rattler for the investigation of paving brick and materials of similar class.

COURSES OF STUDY.

The practical work extends over a period of two years, and includes experience in the wood shop, machine shop, foundry and forge shop. During this period the class-room work and drawing are preparatory to the theoretical studies taken up during the third and fourth years. The course in Mechanical Engineering, as administered at the State University of Kentucky, may be considered as being divided into five parts, as follows: Drawing, Electrical Engineering, Heat Engineering, Mechanics of Engineering, and Practical Mechanics.

DEGREES.

The course of study in Mechanical and Electrical Engineering leads to the degree of B.M.E. (Bachelor of Mechanical Engineering). The advanced degree, M.E. (Mechanical Engineer), or E.E. (Electrical Engineer), may be obtained by a resident student in one year after taking the degree B.M.E. from the State University of Kentucky, or any institution of equal requirements, provided he has done the work assigned him satisfactorily, passed his examination, and presented an acceptable thesis.

A non-resident student may obtain the degree of M.E., or E.E., three years after graduation, if he has been engaged in practical engineering work during that time, passes an examination, and presents an acceptable thesis. At least one year's notice must be given to the Faculty that post-graduate work is being done and the work must be approved by the Faculty.

MECHANICAL AND ELECTRICAL ENGINEERING COURSE LEADING TO THE DEGREE OF B. M. E.

FRESHMAN YEAR.

FIRST SEMESTER.

Course	Subject	Hrs. Rec.	Hrs. Lab.	Credits *
English 1	English Composition	3		1.5
Mathematics 3	College Algebra	5		2.5
Physics 1b	General College Physics	3		1.5
Drawing 1	Mechanical Drawing		10	2.5
Drawing 2	Freehand Drawing		1	.25
Prac. Mech. 1	Wood Working		12	3.0
Military Science			3	.75
Phy. Education			2	.5

SECOND SEMESTER.

Course	Subject	Hrs. Rec.	Hrs. Lab.	Credits *
English 1a	English Literature	3		1.5
Mathematics 2	Trigonometry	5		2.5
Physics 1b	General College Physics	3		1.0
Physics 2	Elementary Physical Measurements		4	1.0
Drawing 1	Mechanical Drawing		5	
Drawing 2	Freehand Drawing		1	
Drawing 3	Descriptive Geometry	3		2.0
Prac. Mech. 2 & 3	Pattern Making and Foundry Work		8	2.0
Military Science			3	.75
Phy. Education			2	.5

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*A credit represents one hour of recitation or two hours of laboratory per week for thirty-six weeks.

SOPHOMORE YEAR,

FIRST SEMESTER.

Course	Subject	Hrs Rec.	Hrs. Lab.	Credits
Mathematics 4	Analytical Geometry	5		2.5
Physics 5	Mechanics and Molecular Physics	3		1.5
Chemistry 1	General Inorganic Chemistry	3	4	2.5
Surveying	Surveying, first half	2	2	1.25
Surveying	Surveying, second half	2		
Prac. Mech. 5	Lectures on Shop Practice	2		1.0
Drawing 4	Elementary Design		5	1.25
Prac. Mech. 4	Forge and Machine Shop Work, first half		6	1.75
Prac. Mech. 4	Forge and Machine Shop Work, sec. half		8	
Military Science			3	.75
Phy. Education			2	.5

SECOND SEMESTER.

Course	Subject	Hrs Rec.	Hrs. Lab.	Credits
Mathematics 4	Analytical Geometry	5		2.5
Mathematics 5	Calculus	5		2.5
Physics 5 and 6	Electricity, Sound and Light	3	2	2.0
Chemistry 2	General Inorganic Chemistry		4	2.5
Drawing 4	Elementary Design		4	1.0
Prac. Mech. 4	Forge and Machine Shop Work		8	2.0
Military Science			3	.75
Phy. Education			2	0.5

JUNIOR YEAR.

FIRST SEMESTER.

Course	Subject	Hrs. Rec.	Hrs. Lab,	Credits
Mathematics 5	Calculus	5		2.5
Elec. Engin. 1	Elements of Electrical Engineering	5		2.5
Mech. of Engin. 1	Mechanics of Materials	5		2.5
Mech. of Engin. 3	Kinematics	4		2.
Mech. of Engn. 4	Kinematic Drawing		12	3.
Mech. of Engin. 5	Slide Rule Practice	1		.25
Mech. of Engin. 2	Testing of Materials		2	.5

SECOND SEMESTER.

Course	Subject	Hrs. Rec.	Hrs. Lab,	Credits
Mech. of Engin. 6	Analytical Mechanics	5		2.5
Mech. of Engin. 7	Machine Eesign		8	2.0
Elec. Engin. 2	Applications of Electricity	5		2.5
Elee. Engin 5	Elementary Electrical Design, first half		6	.75
Elec. Engin. 9	Electricsl Lab. D. C., alt. wks., first half		2	.37
Elec, Engin. 9	Electrical Laboratory D. C., sec. half		2	
Elec. Engin. 6	Dynamo Design, second half		10	1.0
Heat. Engin. 8	Steam Laboratory, first half, alt. weeks		2	.5
Heat Engin. 8	Steam Laboratory, second half		2	
Chemistry 17	Gas Analysis, first half		2	.25
	Graphic Statics, first half		6	.75
Metallurgy 14	Metallurgy of Iron and Steel, sec. half	2		.5

SENIOR YEAR.

FIRST SEMESTER.

Course	Subject	Hrs. Rec.	Hrs. Lab.	Credits
Elec. Engin. 3	Alternating Currents	5	....	2.5
Elec. Engin. 7	Dynamo Design	....	4	1.
Elec. Engin. 10	Electrical Laboratory A. C.	....	2	.5
Heat Engin. 1	Thermodynamics	3	....	1.5
Heat Engin. 2 & 3	Valve Gears and Steam Boilers	5	....	2.5
Heat Engin. 6 & 7	Valve Gear Design and Boiler Design	....	6	1.5
Heat Engin. 9	Steam and Gas Engine Laboratory	....	2	.5
Hydraulics	Hydraulics	2	....	1.0
Collateral Activ. 6	American Society of Mechanical Engineers and American Institute of Electrical Engineers	1	....	....
Collateral Activ. 5	Magazine Digest	2	....	1.

SECOND SEMESTER

Course	Subject	Hrs. Rec.	Hrs. Lab.	Credits
Elec. Engin. 4	Gen. and Trans. of Power, first half	5	....	1.25
Elec. Engin. 10	Electrical Laboratory A. C., first half	....	2	.25
Elec. Engin. 8	Transformer Design, first half	....	4	.5
Heat Engin. 9	Steam and Gas Laboratory, first half	....	2	.25
Heat Engin. 4	Steam Engin. of Power Plants, first half	5	....	1.25
Heat Engin. 5	Gas Engineering, first half	3	....	.75
Mech. of Engin. 8	Heating and Ventilating, first half	2	....	.5
Mech. of Engin. 9	Heating and Ventilating, Des., first half	....	6	.75
Collateral Activ. 3	Thesis, second half	27	....	6.75
Collateral Activ. 6	A. S. M. E. & A. I. E. E.	1	....	....
Collateral Activ. 5	Magazine Digest	2	....	1.
Collateral Activ. 4	Thesis Assembly, second half	1	....	.25
Drawing 5	The. and Prac. of Photography, sec. half	....	2	.25

DEPARTMENTS OF INSTRUCTION.

DRAWING.

Professor Nollau, Assistant Professors Wilhoite, Horine, Curtis and Cassidy, and Misses Lowry.

1. **Mechanical Drawing.** Comprising: (a) Free-hand sketches, drawing from copies and models, using parts of machines in the Laboratories as models. (b) Free-hand lettering. (c) Exercises in tinting and shading. (d) Tracing. (e) Blue-printing. Ten hours per week, first semester; five hours per week, second semester.

(NOLLAU, HORINE, CASSIDY)

2. **Free-Hand Drawing.** One hour per week, throughout the year.

(MISSES LOWRY)

3. **Descriptive Geometry.** This work includes first the discussion of

descriptive geometry as a branch of pure mathematics, later comes a consideration of the application of descriptive geometry principles as an aid to engineering drawing. The lectures and recitations are supplemented by work in the drawing room during the latter part of the semester. Five hours per week. Second semester.
(Nollau, Wilhoite, Curtis)

4. **Elementary Design.** (a) Drawing the parts of machines and complete machines to scale. (b) Design of machine details. Five hours per week, fiirst semester; four hours per week, second semester. (Nollau)

5. **Theory and Practice of Photography.** Lectures on the chemistry and optics of photography especially prepared with reference to the latest practice in photographic art. The student also has laboratory practice in photography which gives him a good practical working knowledge of picture taking and picture making with particular application to engineering subjects. Two hours per week. Second half of second semester.
(Nollau)

ELECTRICAL ENGINEERING.

Professor Freeman, Instructor Duncan.

1. **Elements of Electrical Engineering.** This work covers a study of the fundamental laws of electrical engineering; the construction and principle of the simpler forms of measuring instruments, such as galvanometers, ammeters, voltmeters, and wattmeters; direct current circuits and transmission lines; the fundamental theory of direct current generators and motors, and the construction and uses of storage batteries. Five hours per week. First semester. (Freeman)

2. **Applications of Electricity.** This is a continuation of Course 1 and involves a more detailed study of the design and construction of direct current machines. Considerable time is also devoted to illumination, telegraphy and telephony and some attention is given to the rules of the National Board of Fire Underwriters. Five hours per week. Second semester. (Freeman)

3. **Alternating Currents.** This work involves a study of the fundamental principles of alternating currents and the principle and construction of alternating current generators and motors, transformers and converters. Five hours per week. First semester. (Freeman)

4. **Generation and Transmission of Power.** This involves a study of the design and operation of central stations and of the construction of transmission lines. Considerable time is devoted to a study of the theory

and operation of the switching apparatus commonly used in modern central stations. Five hours per week. First half of second semester. (FREEMAN)

5. **Electrical Design.** The first part of this course involves design of an elementary character covering such appartus as condensers and resistance coils. During the latter part, each student is given a problem in switchboard design which involves a study of parallel operation of generators and the arrangement of bus bars, control apparatus and feeder circuits. The work is for the most part done in the drawing room and is supplemented with lectures, whenever necessary, in order to give the student a clear idea of the methods of procedure which he should employ. Six hours per week. First half of second semester. (FREEMAN, DUNCAN)

6. **Dynamo Design.** This work involves all of the calculations necessary in the design of a direct current generator or motor. Each student is assigned a separate problem and follows the methods described by means of lectures and standard works on design. Ten hours per week. Second half of second semester. (FREEMAN, DUNCAN)

7. **Dynamo Design.** This is a continuation of Course 6. Each student makes a complete set of detailed drawings showing the construction of the particular machine which was assigned him at the beginning of Course 6. Four hours per week. First semester. (FREEMAN, DUNCAN)

8. **Transformer Design.** A complete set of calculations and detailed drawings is made of a common type of transformer. Each student is assigned an individual problem. Some standard text is used as a reference. Four hours per week. First half of second semester. (FREEMAN, DUNCAN)

9. **Elecrical Laboratory.** D. C. The electrical experiments are designed to parallel as far as possible the work in Courses 1 and 2, the plan being to give the student practical illustrations of the theory covered in the class room. A comprehensive report of each experiment is required by each student to be handed in within one week after the experiment is completed. Two hours alternate weeks, first half and two hours per week, second half of second semester. (FREEMAN, DUNCAN)

10. **Electrical Laboratory.** A. C. A series of experiments is provided which brings out the fundamental principles studied in the class room. The first experiments are of an elementary character, involving series and parallel combinations of resistances, inductances and capacities, and require the applications of complex quantity for the conven-

ient analysis of the data obtained. Then the various features of the operation of generators, synchronous moters, transformers, induction motors, and the various forms of a.c. measuring apparatus are studied experimentally. A comprehensive report on each experiment is required of each student within a week after the experiment is performed. Two hours per week. First semester and first half of second semester. (FREEMAN, DUNCAN)

11. **Alternating Currents for Mining Engineers.** This is a short course covering a study of the fundamental principles of alternating currents and of the more important types of alternating current machines. It is given at a time to suit the schedule of Senior students in the college of mines and metallurgy. (DUNCAN)

HEAT ENGINEERING.

Dean Anderson, Assistant Profcssors Wilhoite, Horine and Cassidy.

1. **Thermodynamics.** This work consists of a study of the laws of thermodynamics, thermal capacities, and the application of thermodynamics to the steam engine, steam turbine, and gas engine. Three hours per week. First semester. (ANDERSON, CASSIDY)

2. **Valve Gears.** The study of various forms of standard engine valves and methods of designing. Five hours per week. First half of first semester. (ANDERSON, HORINE)

3. **Steam Boilers.** A study of the various commercial steam boilers, consumption of fuel, incrustations, determining of horse power of boilers, boiler tests, the design of boilers for efficiency and economy, and the methods of heat transmission. Four hours per week. Second half of first semester. (ANDERSON, HORINE)

4. **Steam Engineering of Power Plants.** In this course the theory, design and operation of the steam appliances used in connection with the generation of power in steam central stations are studied together with the manner in which the apparatus is associated in a complete plant. Five hours per week. First half of second semester. (ANDERSON, CASSIDY)

5. **Gas Engineering.** This comprises a study of the theory, design and operation of the various types of internal combustion engines. Three hours per week. First half of second semester. (ANDERSON, HORINE)

6. **Valve Design.** In valve design the essentials of steam distribution are presented by the solution of a number of problems involving first the kinematics of valve motions and later the analysis of valve gears

on some of the prominent engines on the American market. Finally valve gears are designed to produce a certain steam distribution. Six hours per week. First half of first semester. (ANDERSON, HORINE)

7. **Boiler Design.** In boiler design the student is familiarized with the best steam boiler practice in horizontal and water tube designs. Six hours per week. Second half of first semester. (ANDERSON, HORINE)

8. **Steam Laboratory.** This laboratory course involves a study of the apparatus used by the steam engineer, and the experiments are intended to familiarize the student with the simpler methods of measuring heat units and determining mechanical power. Two hours, alternate weeks first half; and two hours per week second half of second semester. (ANDERSON, WILHOITE)

9. **Steam and Gas Fngine Laboratory.** A series of experiments with steam and gas apparatus and machinery, for the purpose of training men in the refinements of steam and gas engineering. Two hours per week. First semester, and first half of second semester. (ANDERSON, WILHOITE)

MECHANICS OF ENGINEERING.

Professor Frankel, Assistant Professors Curtis and Wilhoite.

1. **Mechanics of Materials.** This course presents to the student the laws governing the behavior of the different materials used in construction under the action of forces. Beams, columns and shafts of different shapes and materials are analyzed with reference to their resistance and deformation when subjected to compressional, tensional and torsional strains. Problems including the design of truss members, floors, girders and re-inforced concrete construction are given. Five hours per week. First semester. (FRANKEL)

2. **Testing of Materials.** In the testing of materials laboratory experiments are conducted to verify the laws governing materials under stress and to establish the principles of the mechanics of materials. Experimental investigation of woods, irons, cements, bricks in their various forms are made with a view of impressing the student with the factors entering into the use of such materials in engineering construction. Two hours per week. First semester. (FRANKEL, CURTIS)

3. **Kinematics.** This course is intended to familiarize the student with the mutual dependence of the movements in the parts of a machine. Special attention is given to the analysis of mechanisms involving link-motions, gear teeth, cams, communication of motion by rolling and slid-

ing contact and quick-return motions. Four hours per week. First semester. (FRANKEL,)

4. **Kinematic Design.** This course is given in conjunction with the theoretical work. It consists of eight plates of design of spur, bevel and worm gearing, and other mechanisms which illustrate the general principles discussed in kinematic problems. Twelve hours per week. First semester. (FRANKEL, CURTIS)

5. **Slide Rule Practice.** This course is intended to familiarize the student with the theory and use of the slide rule. One hour per week. First semester. (WILHOITE)

6. **Analytical Mechanics.** This subject is given with a view of encouraging original analyisis, logical proofs and rational conclusions with respect to the treatment of the equilibrium and motion of bodies under the action of force. The application of the fundamental principles of mechanics to engineering problems is treated in a way calculated to interest the student in the application of analytical mechanics in his engineering work. Flve hours per week. Second semester. (FRANKEL)

7. **Machine Design.** A complete design of some modern machine tool is required of each student taking this work. This includes a written digest of the analysis of similar machines on the market and complete shop drawings of the special machine assigned to the individual student according to given specifications. This work is supplemented by a course of lectures to emphasize particularly the best practices in machine building as represented by the design of our modern machines. The cutting speeds and feeds of high speed tools, the design of variable speed boxes, design of bearings, the analysis of the stresses set up in the parts of machines and the calculations of the sizes of parts, are all discussed in the course of these lectures. Special machines that involve some of the more interesting problems of design are taken as a whole and analyzed in detail. Eight hours per week. Second semester. (FRANKEL, CURTIS)

8. **Heating and Ventilating.** This is a study of the calculations necessary for the design of a modern heating and ventilating installation. Details of the construction of the apparatus required and the best methods of erecting same are carefully considered. Furance heating, steam heating, hot water heating are all included in the investigations; and calculations are made for each system. The relative merits of each system under particular conditions are emphasized. Two hours per week. First half of second semester. (FRANKEL)

9. **Heating and Ventliating Design.** The class work in heating and ventilating is supplemented by work in the drawing room where for a

given building, heating plants of three systems are designed, and working drawings made showing the location and size of apparatus. A bill of material and the estimated cost are also included in the requirements. Six hours per week. First half of second semester. (FRANKEL)

PRACTICAL MECHANICS.

Superintendent of Shops Joseph Dicker and Instructor J. B. Dicker.

1. **Wood Working.** This work includes: (a) Recitations on the forms of wood-working tools and the cutting and peculiarities of timber. (b) Lectures on the operation of the various forms of wood-working machinery. (c) Bench-work in wood, including exercises in the following operations: planing, sawing, rabbeting, plowing, notching, splicing, mortising, tenoning, dovetailing, framing, paneling, and the general use of carpenters' tools. (d) Wood-turning, involving the various principles of lathe-work in wood. Twelve hours per week. First semester. (J. B. DICKER)

2. **Pattern Making.** This is a continuation of the course in Wood-Working and is intended to give the student experience in the construction of patterns for use in making iron and brass castings. The work in the shop is supplemented by frequent lectures and recitations on the theory of pattern making. Courses 2 and 3 are co-ordinate and together occupy ten hours per week during the second semester. (J. B. DICKER)

3. **Foundry Work.** This includes the various operations of molding, core-making and the melting and casting of iron, brass and other commercial alloys. The practical work in the foundry is supplemented by lectures and recitations on the proper construction and use of patterns, core making, cupola practice, making of alloys, the modern system of hand and machine molding and the processes involved in producing sound, suitable castings in a first-class foundry. Courses 2 and 3 are co-ordinate and together occupy ten hours per week during the seconp semester. (JOS. DICKER)

4. **Forge and Machine Shop Work.** This course comprises: (a) Exercises in iron and steel forging. (b) Exercises in vise work in metal. (c) General machine work; including screw cutting. drilling, planing and the milling of iron, brass and steel. Six hours per week, first half of the first semester; and eight hours per week, remainder of the year. (JOS. DICKER)

5. **Lectures on Shop Practice.** A presentation of the essentials of efficient machine shop practice. Two hours per week. First semester. (JOS. DICKER.)

COLLATERAL ACTIVITIES.

1. **Junior Inspection Trip.** Five days during the third week of March are given up primarly to the study of important machine tool building and manufacturing plants in the vicinity of Cincinnati, Hamilton and Dayton, Ohio. A portion of the time is devoted to the analysis of power and electric lighting stations. The itinerary is carefully arranged to give to juniors an opportunity to see the best modern manufacturing practice and as Cincinnati is the acknowledged center of the machine building world the student is given an unusual opportunity to study the very latest development in the machine designer's art at a comparatively small cost and little loss of time from his regular collegiate work. (FRANKEL, FREEMAN)

2. **Senior Inspection Trip.** This trip includes visits to the most important mechanical and electrical engineering industries in Chicago and vicinity. One week is devoted to the itinerary, and the following places are carefelly studied from an engineering standpoint; Indiana Steel Company's plant, Gary, Indiana. Water intakes, Chicago Water Works, eight miles on Lake Michigan; Chicago Avenue and Central Park pumping stations, Quarry Street; and Northwest generating stations of the Commonwealth Edison Company; power plant of South Side Elevated Railway; plant of the Pullman Palace Car Company; packing plant of Armour & Company; Hawthorne plant of the Western Electric Company; power plant of the Metropoliton elevated; power plant of Blackstone Hote; the main office of the Chicago Telephone Exchange; the central office tunnels of the Automatic Telephone Exchange; and the Division Street plant of the Peoples Gas, Light and Coke Company. (ANDERSON, FREEMAN)

3. **Thesis.** Heretofore each student has been assigned an individual thesis problem which he worked out independently. A new scheme was inaugurated during the past year in that the entire senoir class in Mechanical and Electrical Engineering was given the problem of making a complete set of plans and specifications for a power plant to supply electrical energy to all of central Kentucky. The conditions existing in a large consulting engineering office were duplicated as far as possible the idea being to give the men a clear insight into the operation of such an

office as well as to thoroughly acquaint them with the details of making a set of plans and specifications for a large power generating station.

(ANDERSON, FRANKEL, FREEMAN, CASSIDAY, DUNCAN)

4. Thesis Assembly. The senior class is assembled for one hour each week for the purpose of discussing the work which each man is doing in connection with the preparation of his thesis. In this way each student is given the benefit of any interesting work that is being done individually by the other members of the class.

(ANDERSON, FRANKEL, FREEMAN, CASSIDY, DUNCAN)

5. Magazine Digest. This time is devoted to a review of the current engineering and scientific journals. One-half of the time is given to mechanical engineering and one-half to electrical engineering articles. Each student is assigned one magazine, or part of a magazine to review and discuss before the class at each meeting. Two hours per week. Throughout the year. (ANDERSON. FREEMAN, CASSIDY, DUNCAN)

6. A. S. M. E. and A. I. E. E. Each student in the senior class in the College of Mechanical and Electrical Engineering is enrolled as a student member of the American Society of Mechanical Engineers and the American Institute of Electrical Engineers. They receive the transactions of these two Societies which are issued monthly. The material contained in these form the basis of papers and discussions which are prepared and presented by the students. One hour per week. Throughout the year.

7. Class Societies. Each class in the College of Mechanical and Electrical Engineering is organized into a society which holds meetings at least once a month at times to suit their regular schedule.

ADMISSION AND CLASSIFICATION.

Students will be admitted to the University as their previous training warrants. They will be admitted to the Freshman class, to advanced standing, to special courses as special students, or admitted as graduate students.

A. ADMISSION TO THE FRESHMAN CLASS.

An applicant for admission to the Freshman class of any of the Colleges of the University must offer credit for fifteen units* of high school or other secondary school work, so chosen as to include those prescribed by the particular college he desires to enter. Students who offer thirteen units will be admitted conditionally.

ENTRANCE SUBJECTS.

The units offered for admission to the Freshman class must be taken from the list as given below. The numbers indicate the value in units of each subject.

English	3 to 4
Algebra	1½
Plane Geometry	1
History	1 to 3½
Foreign Languages	2
Solid Geometry	½
Trigonometry	½
French	1 to 3
German	1 to 3
Spanish	1 to 3
Greek	1 to 3
Latin	1 to 4
Civil Government	½
Botany	½ to 1
Chemistry	½ to 1
Physics	1
Physiology	½ to 1
Physical Geography	½
Geology	½ to 1
Zoology	½ to 1
Psychology or Pedagogy	½
Political Economy	½
Agriculture	½
Domestic Science	½
Commercial Geography	½
Commercial Arithmetic	½
Surveying	½
Bookkeeping	½
Manual Training	½
Drawing	½
Teaching of 6 months or more, holding first class certificate	1

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*A unit represents a subject pursued five periods a week for one year.

Graduates of first-class High Schools who have had four full years' work in English of five recitations per week may offer four units in English.

No subject offered as an entrance requirement can be counted again in the total credits required for the completion of a college course.

SUBJECTS AND UNITS REQUIRED BY THE SEVERAL COLLEGES.

The following table will show the subjects required for entrance to the several colleges. The elective units indicated must be chosen from the list on the preceding page.

ARTS AND SCIENCE		AGRICULTURE	CIVIL ENG.	MECH. AND ELEC. ENG.	MINES AND METALL'GY	LAW
A. B.	B. S.					
English, 3	English, 3	English, 3	English, 3	English, 3	Engllsh, 3	English, 3
Algebra, 1½	Algebra, 1½	Algebra, 1½	Algebra, 1½	Algebra, 1½	Algebra, 1½	Algebra, 1½
Plane Geometry, 1	Plane Geometry. 1	Plane Geometry, 1	Plane Geometry, 1	Plane Geometry. 1	Plane Geometry, 1	Plane Geometry, 1
History 1	History, 1	History, 1	History, 1	History, 1	History, 1	History, 2
*Foreign Languages, 4	Foreign Languages, 2	Foreign Languages, 2	Foreign Languages, 2	Foreign Languages, 2	Foreign Languages, 2	Foreign Languages, 2
Science, 1	Science, 1	Science, 1	Science, 1	Science, 1	Science, 1	
			Solid Geometry, ½	Solid Geometry, ½	Solid Geometry, ½	
‡Electives, 3½	‡Electives, 5½	‡Electives, 5½	‡Electives, 5	‡Electives, 5	†Electives, 5	‡Electives, 5½
TOTAL, 15	TOTAL, 15	TOTAL, 15	TOTAL, 15	TOTAL, 15	TOTAL, 15	TOTAL, 15

Students may be admitted to the Freshman class in one of two ways, either on examination or on presenting a certificate from an approved school as described below. Each of these methods is described on the following pages.

ADMISSION BY EXAMINATION.

Examinations for admission will be held in the University on Sept. 14-15, 1914.

All persons who wish to enter the University for the Fall Term's work, except those whose entrance credits have been accepted by the

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*Foreign Languages offered for entrance to the A.B. course must include three years of Latin

‡No more than two units will be allowed for vocational subjects.

Committee on Entrance, must take these examinations. They shall present themselves at the office of the Committee on Entrance at 8:30 a. m. of Monday, September 14. They shall then receive directions concerning the places at which their examinations will be held.

ADMISSION BY CERTIFICATE.

Persons who desire to enter the University by certificate instead of by examination must have their credits certified by the Superintendent or Principal of the school in which they may be secured. Blank forms for such certificates, will be furnished by the Registrar of the University on application. These certificates should be properly made out, signed, and should be mailed to the Registrar as early as possible and not later than September 10th. Only graduates of accredited schools or those who have completed the accredited course, will be admitted upon certificate. A diploma, such as is given at graduation to high school pupils, cannot be substituted for these certificates.

B. ADMISSION TO ADVANCED STANDING.

Candidates who can present equivalents of any part of the college work may secure advanced standing and thereby reduce the number of hours required for graduation. They may secure this advanced standing by one or two methods:

a—By examination on each subject for which credit is desired.

b—By transfer from a college or university, or by credits satisfactory to the Committee on Advanced Standing. An official statement must be submitted to this committee certifying in detail the work for which credit is desired.

C. SPECIAL STUDENTS.

A graduate of another university or college may enter the University to pursue any special work. Other persons may be admitted as special students under the following conditions:

a—They must be at least twenty years of age.

b—They must show the Committee on Entrance good reason for not taking a regular course.

c—They must satisfy the Committee on Entrance of their fitness to do the work which they propose to undertake.

Under certain conditions students may be admitted to a two years agricultural course.

A ten weeks course for special students is also offered in farming. For further information see general catalogue.

County appointees are required by the term of appointment to do full work in a regular course of study and cannot, therefore, be admitted as special students.

D. GRADUATE STUDENTS.

The graduate school is open to students, without distinction of sex, who are graduates of this or any other university or college of recognized standing. In exceptional cases, other persons of proper age and attainments may be admitted as students. Applications for admission to this school should be made to the Dean of the Graduate School, and should be accompanied by official certificates attesting the candidate's completion of an undergraduate course.

For further information see general catalogue.

FEES, ETC.

The necessary expenses, in addition to fees, will be about as follows:

Laundry	$10.00
Books	10.00
Rent of furnished room per week, $1.00	1.50
Board in clubs, per week $2.25 to	2.75
Board in private families per week $3.00 to	3.50
Board and lodging in private families per week, $3.50 to	4.50

Students who are required to do military drill must procure the regulation uniform, which will cost about $15.00.

Board and lodging are provided in Patterson Hall for young women at $3.50 per week. The occupants furnish their own napkins, towels and bedding, except mattresses and pillows, and pay their own laundry bills.

Employment Bureau.

Many students find it necessary to earn money with which to help support themselves while in college. An employment bureau has been organized by President Barker for the purpose of aiding them in securing work. If a student desires to employ part of his time to earn money, he reports to the bureau the number of hours he can work. Many good positions have been secured for the students in this way. There are about fifty various newspaper routes in the city; all of them are carried by college men. The state farm, which is a part of the University, employs many students. If the prospective student has only one or two hours each day for working, it is so arranged by the farm managers that he is always employed. A number of students wait on tables at the boarding houses for their board. The merchants and tailoring establishments of the city employ students to carry bundles. Young men are employed at hotels and restaurants and other work at numerous odd jobs at the homes of the citizens. Almost all the buildings of the University are kept clean by students. A number of young men are employed as stenographers in the city. It is an easy matter for any young man to support himself at this school. Any student seeking employment can get aid by applying at the office of the Y. M. C. A.

SCHOLARSHIPS AND PRIZES.

County Appointees.

Each county in the State is entitled to select and to send to the State University one or more properly prepared students, free of charge for tuition, matriculation and gymnasium fees, as follows:

Each county is entitled to make two appointments each year for 4,500 white pupils or less within the common school age, based upon the last official census preceding said appointment, and for each 3,000 white pupils over 4,500, is entitled to make one additional appointment.

County appointments exempt appointees from payment of tuition fees and provide traveling expenses to those matriculated in any regular course of study which leads to a degree in the University. Appointments are all valid for the term of years necessary to complete the course of study in which the appointee matriculates. If an appointee leaves the University before the expiration of his appointment his county superintendent may appoint another person for his unexpired time.

Beneficiaries are appointed on competitive examination. A Board of Examiners is appointed for this purpose by the county superintendent of common schools. The results of examinations are reported to the superintendent, who from the data thus furnished selects the appointees. Examinations are made upon subjects transmitted to the county superintendent by the faculty of the University.

Appointments are made by the county superintendent between the first day of June and the first day of September of each year. Blanks for these appointments are furnished by the Registrar of the University.

Appointees who are graduates of accredited schools are admitted without examination; other students are admitted by examination.

Tau Beta Pi Scholarship.

The Tau Beta Pi Society offers a cash prize of $100 to the student of the Engineering Colleges who attains the highest scholarship during the Freshman and Sophomore years. The prize is available at the beginning of the Junior year.

Japanese Society Prize.

Through the munificence of Mr. Henry Clews, the Japanese Society of New York donated this year the sum of $100 to be awarded in sums of $75 and $25 respectively for the best two essays on some subject relating to Japan. Aspirants for these prizes must be students of the University. The essays are to be typewritten and must be submitted under an assumed name not later than April 15.

Bennett Prize.

Pursuant to the will of the late Mr. Bennett of New York, a cash prize of $20 in gold is offered to the student of the University who shall submit the best paper on some topic relating to the Origin and Development of Parliamentary Institutions. This prize is awarded in May.

Barker Trophy.

President Barker has given the Union and Patterson Literary Societies a $50 silver cup, for the possession of which they compete in annual debate. The successful society in this contest retains custody of the cup until the next debate.

Barker Prize for the Union Society.

President Barker offers a cash prize of $25 to the Union Society upon conditions to be imposed by the Society.

Barker Prize for the Patterson Society.

President Barker offers a cash prize of $25 to the Patterson Society upon conditions to be imposed by the Society.

Barker Prize for the Philosophian Society.

President Barker offers a cash prize of $25 to the Philosophian Society upon conditions to be imposed by the Society.

Barker Prize for the Horace Mann Society.

President Barker offers a cash prize of $25 to the Horace Mann Society upon conditions to be imposed by the Society.

Crum Prize.

By kindness of Mr. Geo. W. Crum a medal valued at $20 is offered annually to the Patterson Society. The conditions are imposed by the Society and the medal awarded before the Christmas holidays.

Patterson Prize.

Ex-President James K. Patterson offers to the Patterson Society a medal to be awarded annually on March 26, upon conditions imposed by the Society.

Oratorical Prize.

The Union Society offers a $15 gold medal to the successful competitor in an oratorical contest. This contest occurs on February 22 in the University chapel.

Declamation Prize.

A $10 gold medal is offered annually, by the Union Society, to the successful contestant in declamation. This is open to all members of the Society.

Military Prizes.

A cash prize of $65 will be awarded to the best drilled company.

$5 medals will be awarded to the best drilled individual cadets in the Freshman and Sophomore classes respectively.

These prizes will be awarded at the annual Spring Competition.

National Municipal League Prize.

The National Municipal League offers an annual prize of $100 to be given to the author of the best essay on a subject connected with municipal government. The contest is open to all undergraduate students in American colleges. For details concerning the scope and condition of the competition inquiries may be addressed to the Head of the Department of History.

FOR FURTHER INFORMATION RELATIVE TO

College of Mechanical and Electrical Engineering

STATE UNIVERSITY OF KENTUCKY

ADDRESS

DIRECTOR F. PAUL ANDERSON,

Lexington, Kentucky

3 0112 105655457

FOR CONDITIONS OF ADMISSION

TO THE

College of
Mechanical and Electrical Engineering

STATE UNIVERSITY OF KENTUCKY

SEE PAGE 23

FOR FEES AND EXPENSES

See Page 27 of This Bulletin

All Graduates of Accredited Schools are
Admitted Without Examination